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HYDROGEN PURIFICATION PROCESS USING PRESSURE SWING ADSORPTION FOR FUEL CELL APPLICATIONS

ABSTRACT OF THE DISCLOSURE

A PSA system that purifies a feed gas, such as a reformat gas in fuel cell system. The PSA system includes a series of vessels housing an adsorbent or combination of adsorbents that adsorb carbon monoxide, carbon dioxide, nitrogen, water and methane in the reformat gas. The adsorbent vessels are connected to each other and a feed manifold, a product manifold and an exhaust manifold through suitable conduits, where the gas flows are controlled by a product rotating valve and feed rotating valve or a series of open/shut valves. A specialized PSA cycle controls the valves so that the vessels cycle through various stages of equalization, blow-down, purge, pressurization and production to purify the feed gas.